FIG. 1

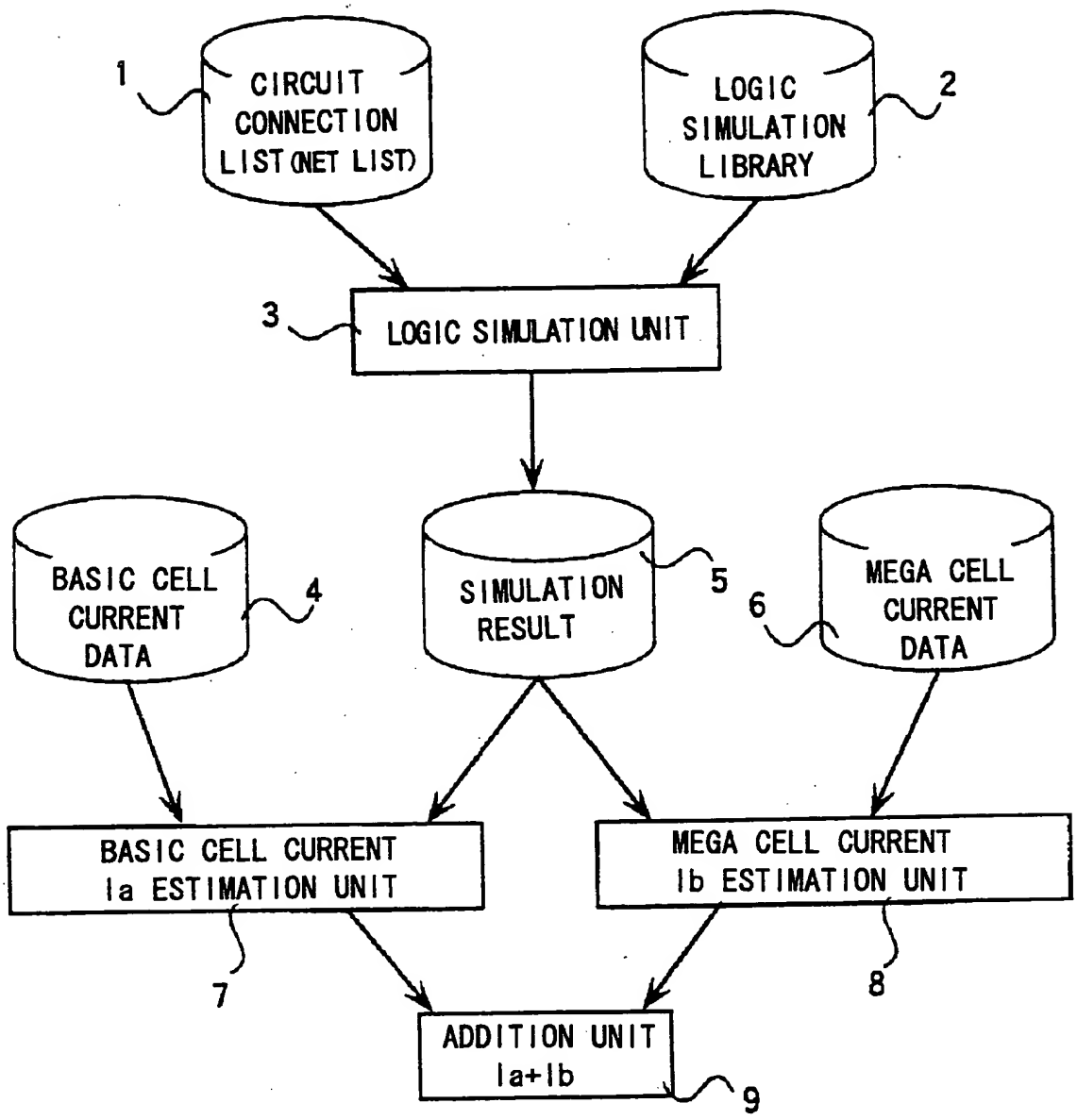
1
CIRCUIT CONNECTION LIST (NET LIST)
2
LOGIC SIMULATION LIBRARY
3
LOGIC SIMULATION UNIT
BASIC CELL CURRENT DATA
4
SIMULATION RESULT
5
6
MEGA CELL CURRENT DATA
BASIC CELL CURRENT Ia ESTIMATION UNIT
MEGA CELL CURRENT Ib ESTIMATION UNIT
7
8
ADDITION UNIT Ia+Ib
9

FIG. 2

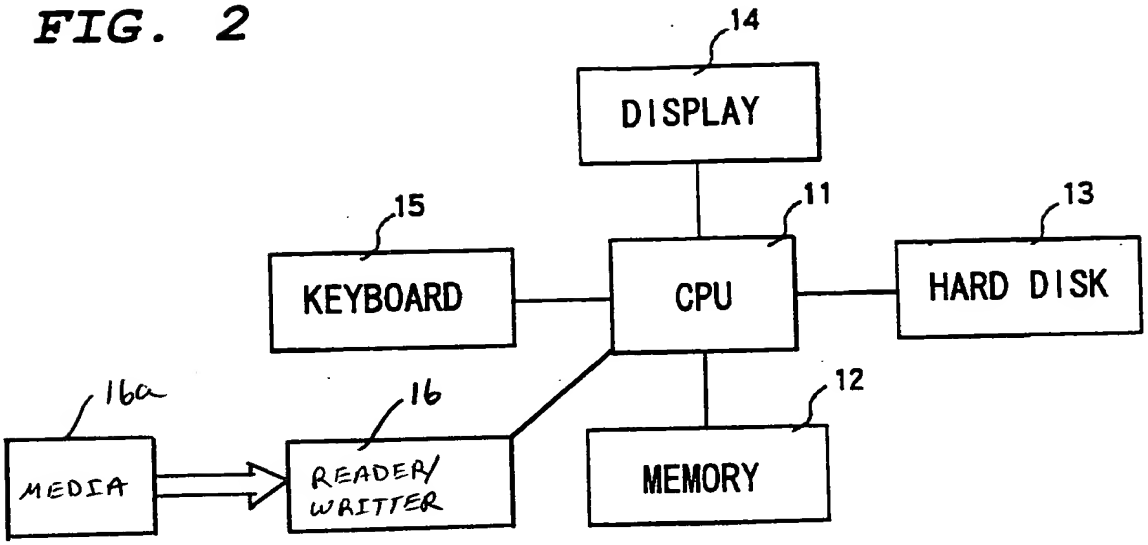

FIG. 3

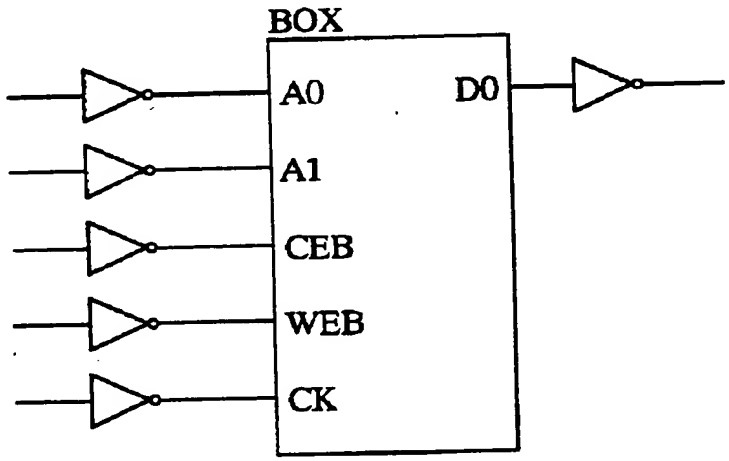

FIG. 4

CELL NAME	RAM
CELL TYPE	SYNCHRONOUS
FREQUENCY SIGNAL	CK
STATE LIST	standby, read, write

FIG. 5

STATE	STATE DEFINING CONDITION	AC CURRENT	DC CURRENT
standby	CEB=1	0	S
read	WEB=1 && CEB=0	$X \times f$	D0−Z(1)
write	WEB=0 && CEB=0	$Y \times f$	0

FIG. 6

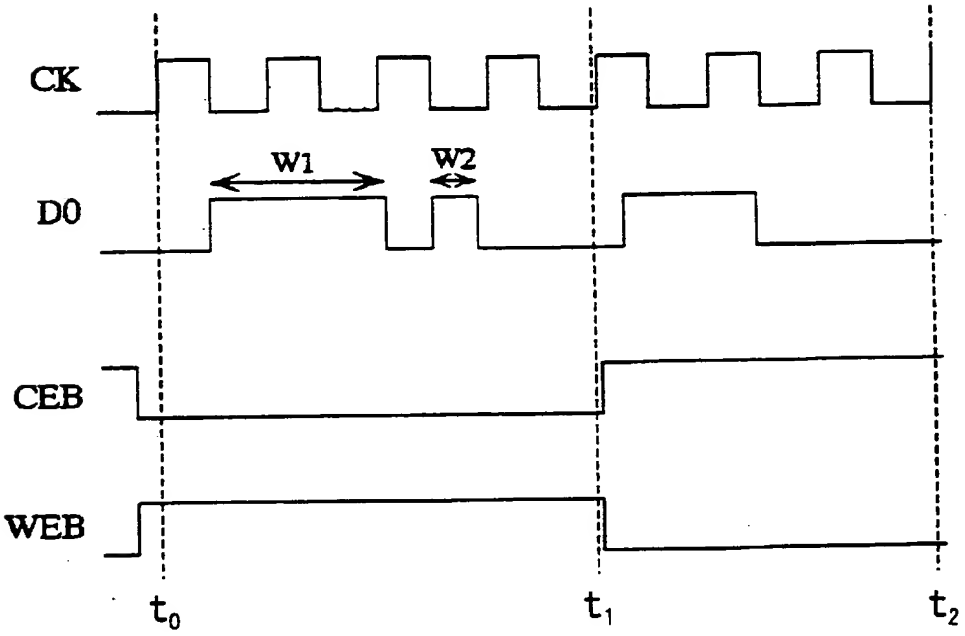

FIG. 7

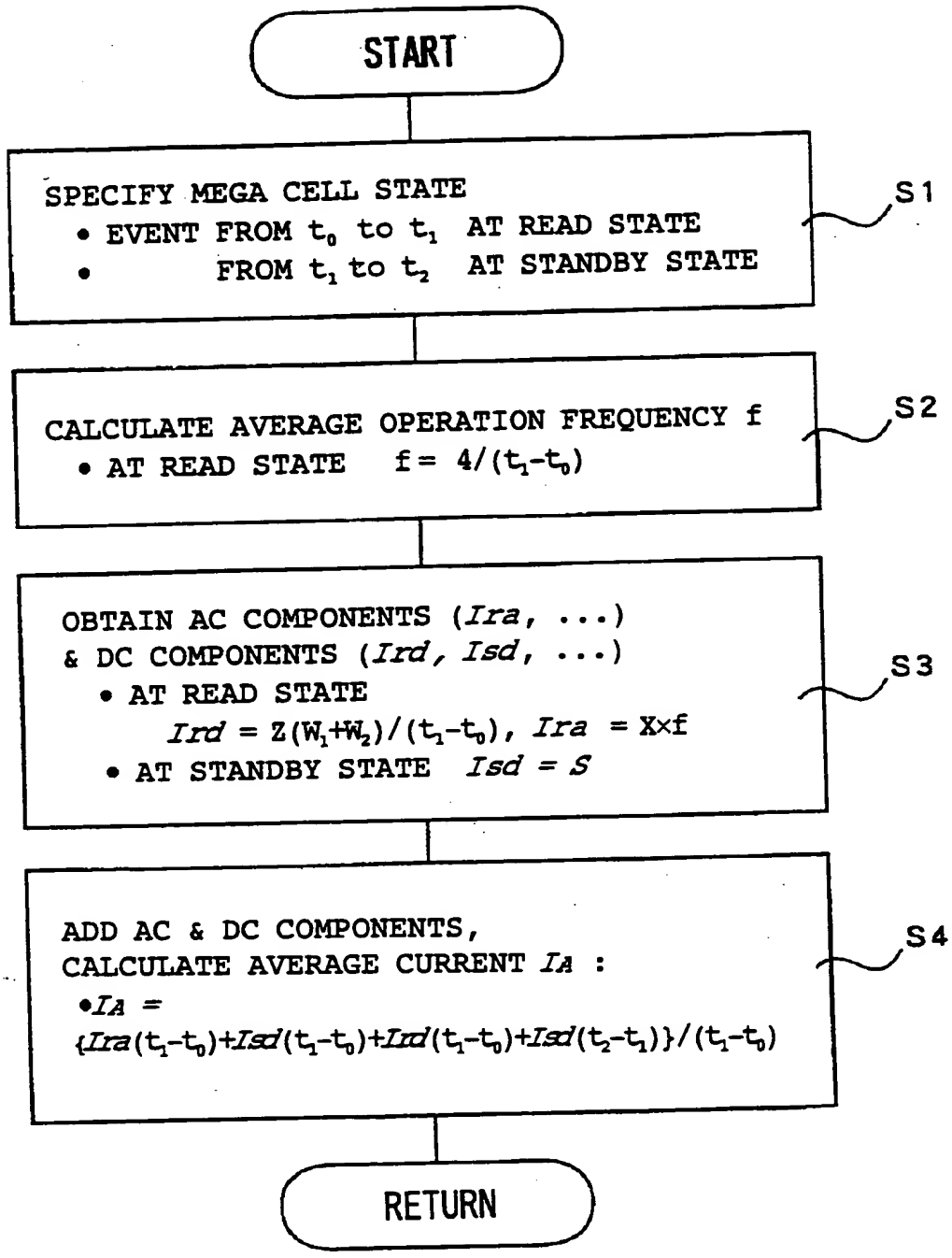
START
SPECIFY MEGA CELL STATE
• EVENT FROM t_0 to t_1 AT READ STATE
• FROM t_1 to t_2 AT STANDBY STATE
S1
CALCULATE AVERAGE OPERATION FREQUENCY f
• AT READ STATE $f = 4/(t_1-t_0)$
S2
OBTAIN AC COMPONENTS (*Ira*, ...)
& DC COMPONENTS (*Ird*, *Isd*, ...)
• AT READ STATE
$Ird = Z(W_1+W_2)/(t_1-t_0)$, $Ira = X \times f$
• AT STANDBY STATE $Isd = S$
S3
ADD AC & DC COMPONENTS,
CALCULATE AVERAGE CURRENT I_A :
• $I_A =$
$\{Ira(t_1-t_0)+Isd(t_1-t_0)+Ird(t_1-t_0)+Isd(t_2-t_1)\}/(t_1-t_0)$
S4
RETURN

FIG. 8

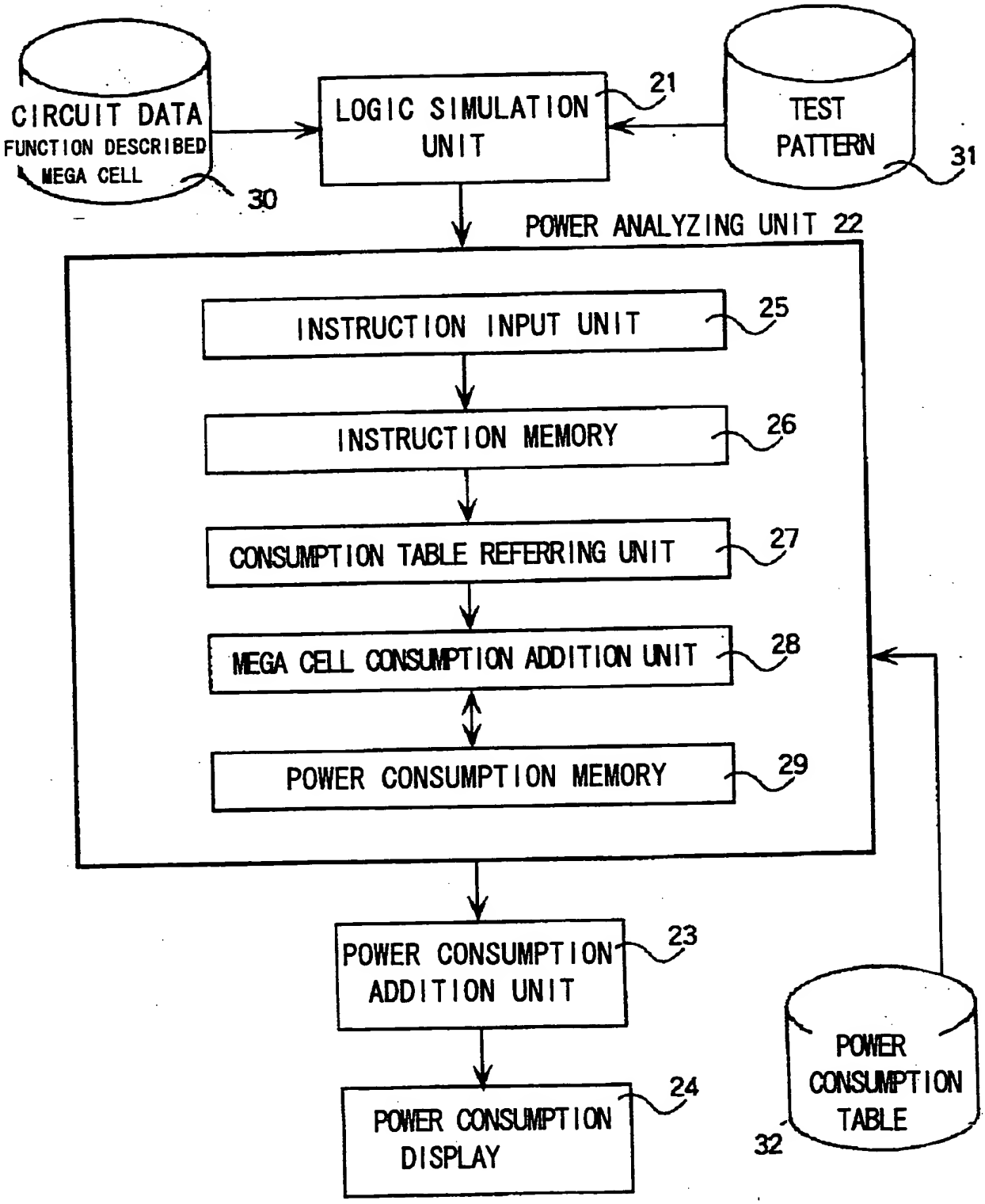
CIRCUIT DATA
FUNCTION DESCRIBED MEGA CELL
30
LOGIC SIMULATION UNIT
21
TEST PATTERN
31
POWER ANALYZING UNIT 22
INSTRUCTION INPUT UNIT
25
INSTRUCTION MEMORY
26
CONSUMPTION TABLE REFERRING UNIT
27
MEGA CELL CONSUMPTION ADDITION UNIT
28
POWER CONSUMPTION MEMORY
29
POWER CONSUMPTION ADDITION UNIT
23
POWER CONSUMPTION DISPLAY
24
POWER CONSUMPTION TABLE
32

FIG. 9

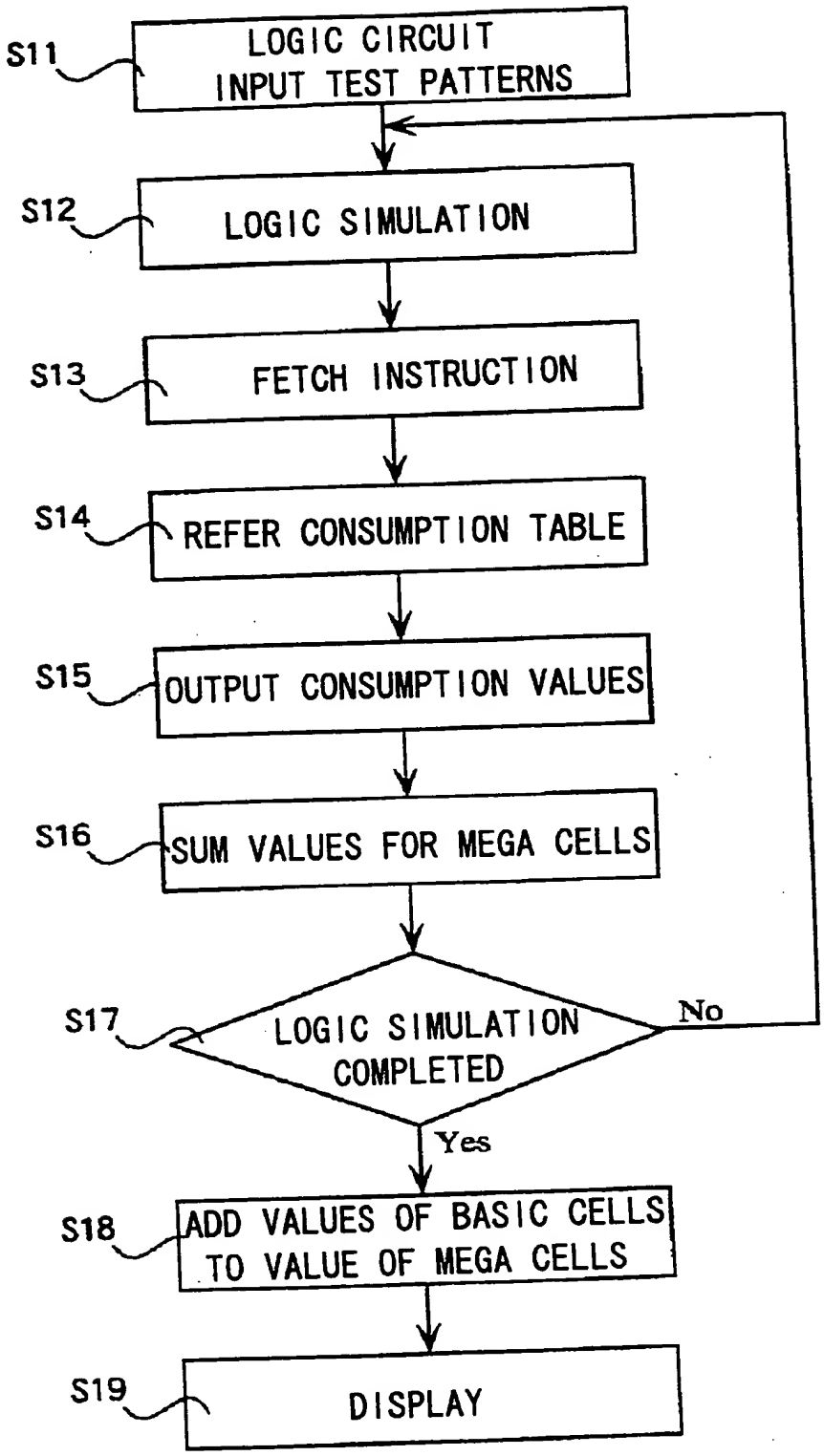
S11
LOGIC CIRCUIT INPUT TEST PATTERNS
S12
LOGIC SIMULATION
S13
FETCH INSTRUCTION
S14
REFER CONSUMPTION TABLE
S15
OUTPUT CONSUMPTION VALUES
S16
SUM VALUES FOR MEGA CELLS
S17
LOGIC SIMULATION COMPLETED
No
Yes
S18
ADD VALUES OF BASIC CELLS TO VALUE OF MEGA CELLS
S19
DISPLAY

FIG. 1

INSTRUCTION	POWER CONSUMPTION
ADD	W0
LDA	Wa
STA	Wb

FIG. 11

```
always  begin
          .
          .
     Inst_LDA;
          .
          .
     Inst_STA;
          .
          .
end
          .
          .
task  Inst_LDA;
  begin
          .
          .
    $PowerAnalysis("LDA");
  end
endtask
          .
          .
task  Inst_STA;
  begin
          .
          .
    $PowerAnalysis("STA");
  end
endtask
          .
          .
```